

# Pioneers 6 Through 12 Mission Support

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*This article discusses the activities of DSN Operations in support of Pioneers 6, 7, 8, 9, 10, and 11 and Pioneer Venus Orbiter (Pioneer 12) missions during April through June 1981.*

## I. Introduction

This article covers the continuing efforts of the Deep Space Network in support of Pioneer Mission Operations during the cruise phases of the Pioneers 6 through 11 spacecraft and Pioneer Venus orbital operations.

## II. Mission Operations and Status

### A. Pioneers 6 through 9

All spacecraft continue to function nominally. Pioneers 6 and 7 received increased Network support due to solar radial alignment with the Pioneer Venus Orbiter.

### B. Pioneer 10

The spacecraft continues to function nominally with on-board systems in good health. The Network has supported various signal strength tests to determine spacecraft receiver threshold at low to high transmitter powers. The results indicate conical scan can continue to be supported by the Network at low power for a few more years.

### C. Pioneer 11

The spacecraft continues in a state of good health and functioning nominally.

### D. Pioneer 12

The spacecraft continues in good health and functioning nominally.

The Project has programmed periapsis to occur at a fixed time of approximately 0200 (Universal time). The spacecraft went through superior conjunction of a duration of approximately 50 days. The 64-meter-antenna network supported with the high-power transmitter on a daily basis to ensure spacecraft command reception vital to its survival.

## III. Special Activities

The Deep Space Network Compatibility Test Area (CTA-21) continues to support the Pioneer Project in concurrence with command software development and operations training.

Owing to the distance of Pioneer 11, the 34-meter-antenna network will require installation of 3-Hz loop filters. Steps have been implemented to provide the 34-meter-antenna network with 3-Hz loop filters and ensure continuous network support.

## IV. Summary

All spacecraft appear in good health and functioning nominally as the Deep Space Network continues its vigilant support. Tracking coverage from April through June 1981 is shown in Table 1.

**Table 1. Tracking coverage, April through June 1981**

Month, 1981	Pioneer spacecraft	Station type	Number of tracks	Tracking time, hr/min
Apr	6	64-m	2	10:15
	7	64-m	1	7:00
	8	64-m	1	7:30
	9	64-m	2	10:55
	10	26-m	2	8:20
		34-m	3	13:25
		64-m	53	378:50
	11	26-m	38	269:05
		34-m	11	92:40
		64-m	16	96:45
	12	26-m	5	41:45
		34-m	16	140:40
		64-m	68	408:55
May	6	64-m	6	34:35
	7	64-m	11	56:10
	8	64-m	1	6:10
	9	64-m	6	36:40
	10	64-m	54	466:40
	11	26-m	39	389:10
		34-m	8	80:00
		64-m	20	149:35
	12	26-m	32	261:55
		34-m	56	494:50
		64-m	16	92:35
Jun	6	64-m	3	13:50
	7	64-m	18	81:00
	8	64-m	1	4:25
	9	64-m	3	14:55
	10	34-m	2	6:45
		64-m	69	465:55
	11	26-m	50	440:55
		34-m	26	212:40
		64-m	16	122:00
	12	26-m	61	504:05
		34-m	55	444:30
		64-m	17	106:55